

Supplementary Material

Mapping the likelihood of koalas across NSW for use in Private Native Forestry: developing a simple, species distribution model that deals with opportunistic data

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Supplementary material

This document contains supplementary material relating to “Mapping the likelihood of koalas across NSW for use in Private Native Forestry: developing a simple, species distribution model that deals with opportunistic data”. It presents colour maps and detailed descriptions of each of the seven koala management areas.

State picture

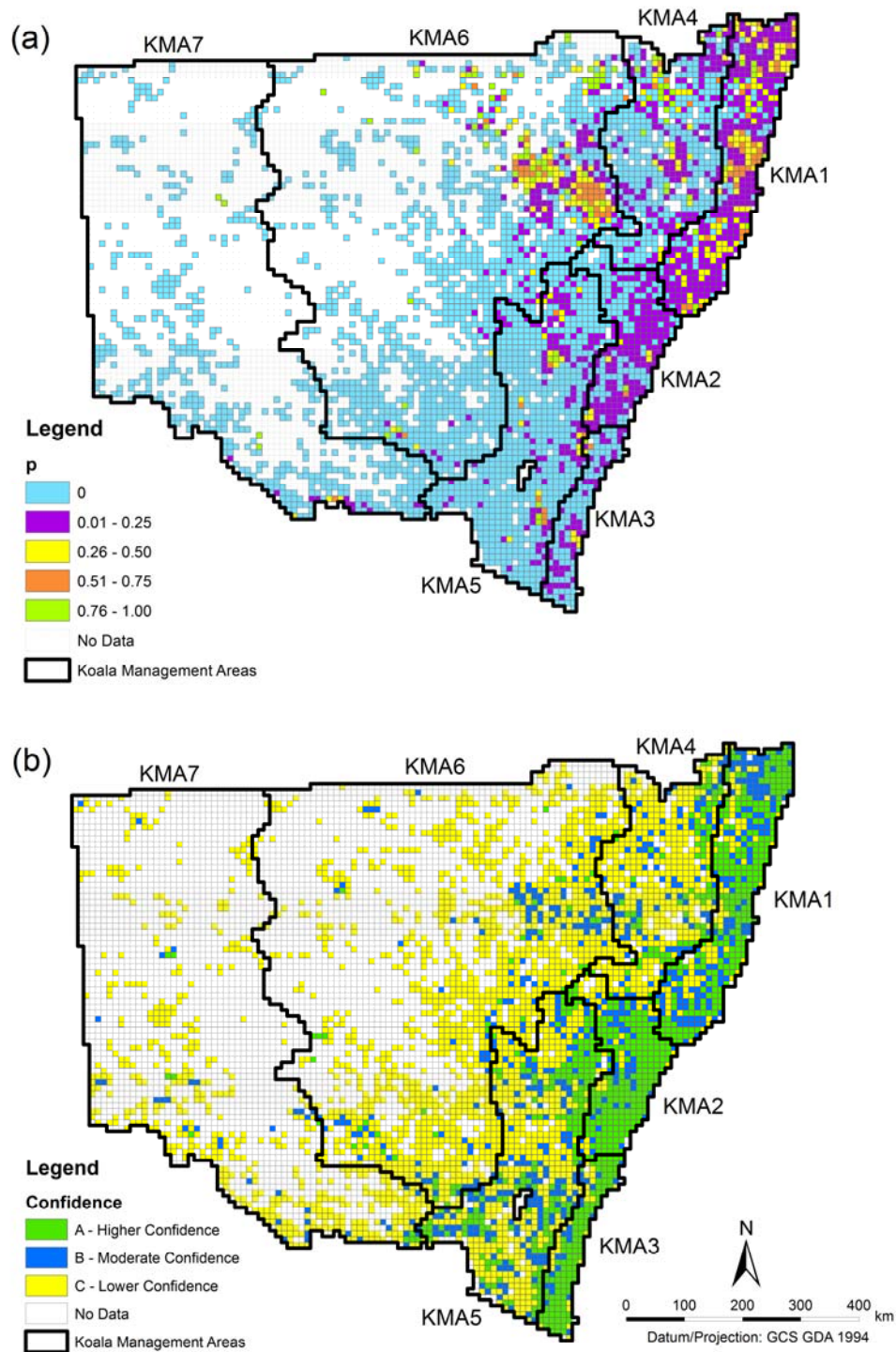


Figure S1: The State-wide distribution of (a) the likelihood of koalas (p) and (b) the confidence level in the estimate

Koala Management Area 1 – North Coast

A detailed assessment of how the current koala map compares with existing koala habitat mapping within KMA1, such as from Comprehensive Koala Plans of Management for the north coast, has been undertaken (Scotts *et al.* 2014). The report indicates that overall there is broad agreement between koala likelihood of occurrence mapping and the locally derived koala habitat mapping. It goes on to state that given the inherent differences between the two mapping methods it would be unrealistic to expect perfect concurrence. Below is a more general discussion of the mapping results for KMA1.

The maps of the likelihood of koalas at both 10-km (Figure S2a) and 5-km (Figure S2b) scales show that koalas are widely distributed across KMA1. Known hot-spots are clearly identifiable such as Coffs Harbour in the mid north coast (Lunney *et al.* 1999) and Lismore in the north (Biolink Ecological Consultants 2011).

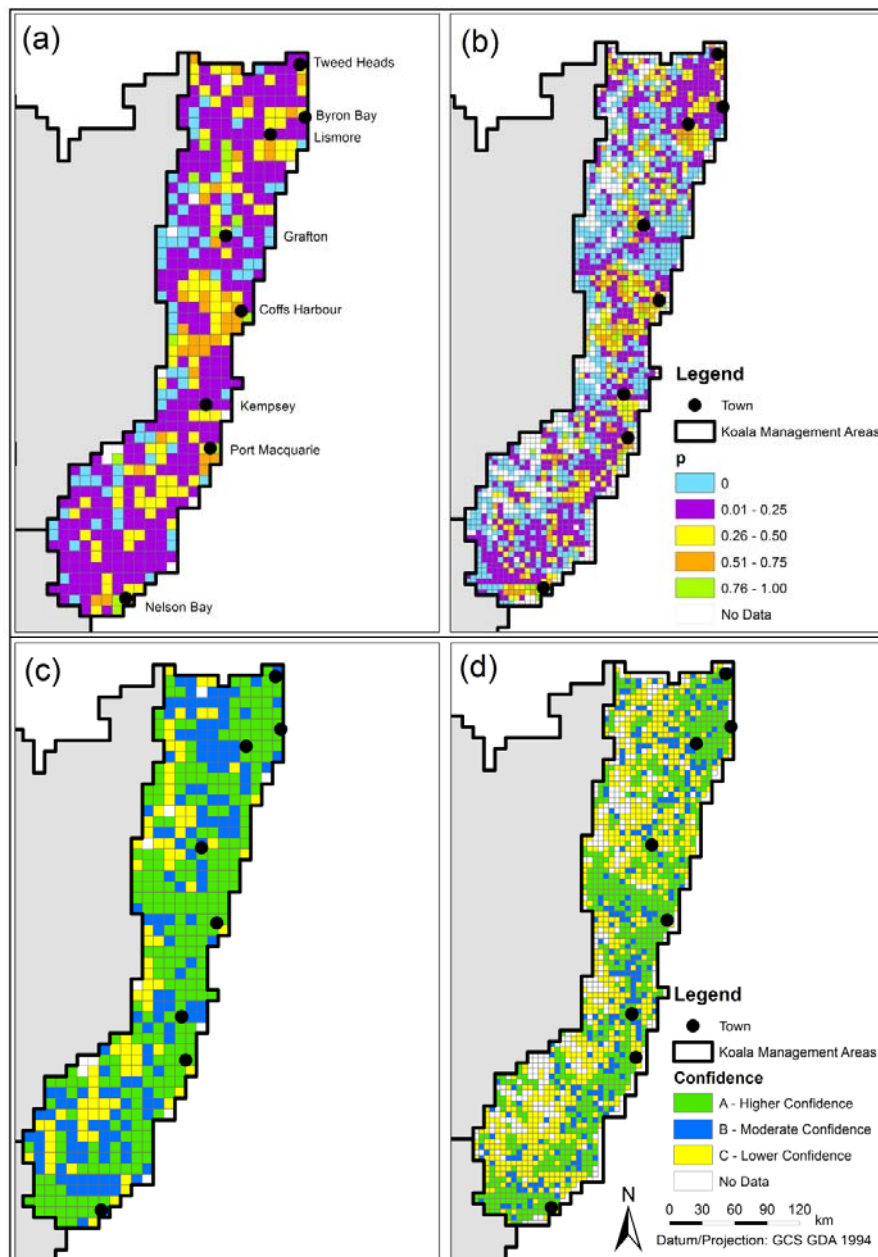


Figure S2: The distribution of (a & b) the likelihood of koalas (p) and (c & d) the confidence level in the estimate within Koala Management Area (KMA) 1. Data are shown at a 10 km (a & c) and 5 km (b & d) grid cell resolution.

Koala Management Area 2 – Central Coast

The likelihood of koalas within KMA2 is generally low but spread widely, including in the Hunter north of Sydney and south (Figure S3a). A higher probability occurs at Campbelltown, between Sydney and Wollongong, corresponding with a known population centre (Lunney *et al.* 2010; Australian Koala Foundation and Campbelltown City Council 2005).

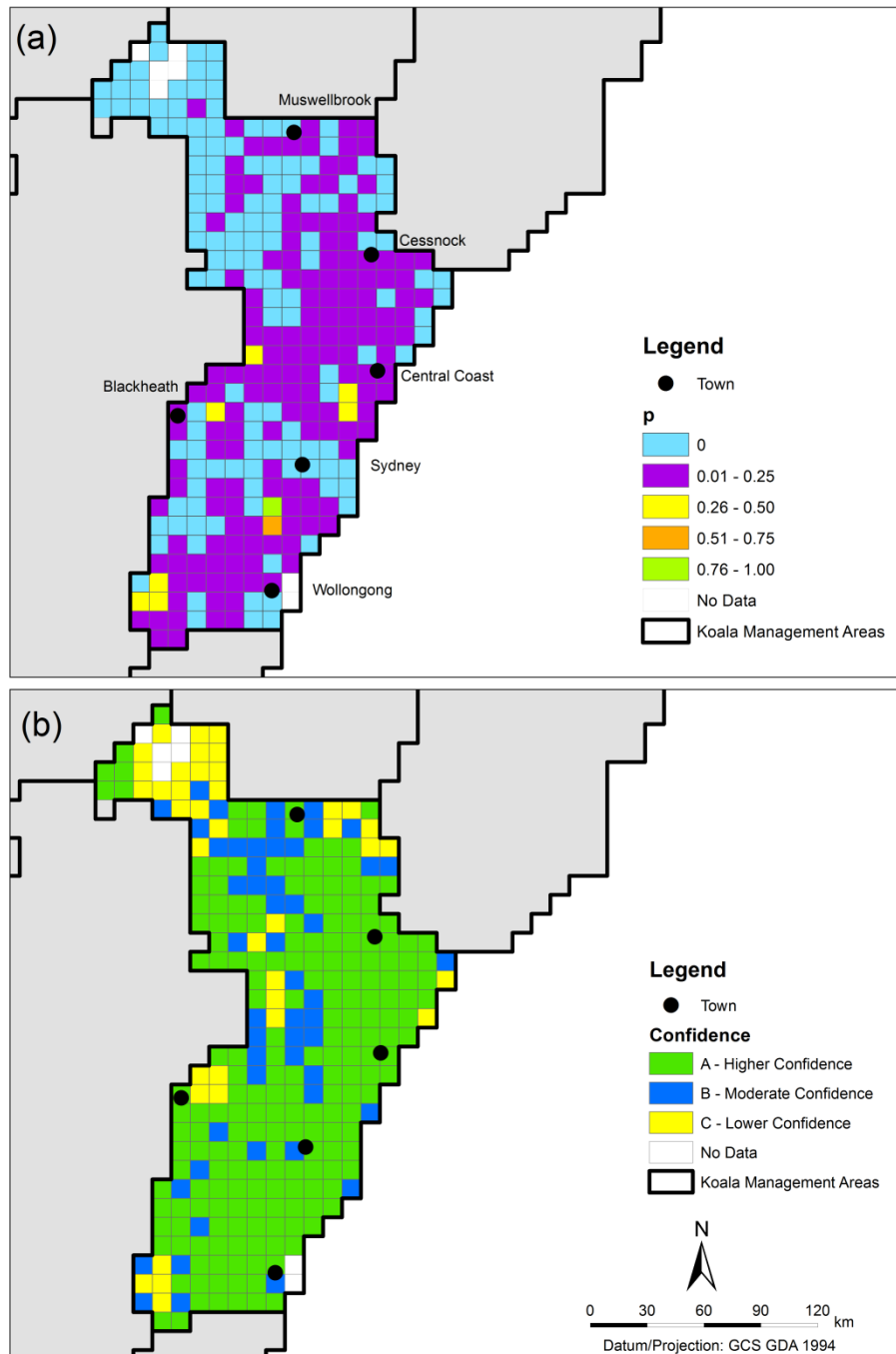


Figure S3: The distribution of (a) the likelihood of koalas (p) and (b) the confidence level in the estimate within Koala Management Area (KMA) 2

Overall a high percentage of cells (68%) have been assigned to the High Confidence category (Table 3 of main document). Only seven cells (2.3%) have No Data.

Koala Management Area 3 – South Coast

The likelihood of koalas is generally very low and patchy across KMA3 (South Coast) (Figure S4a). There is a higher likelihood of koalas in the north of Eden local Government Area to the north of Bega (Figure S4a), corresponding with a known refuge of koalas (Lunney *et al.* 2014). Generally a high percentage of cells are assigned to the High Confidence category (68% - Table 3 in main paper and Figure S4b). Only four cells (2.4%) contain No Data.

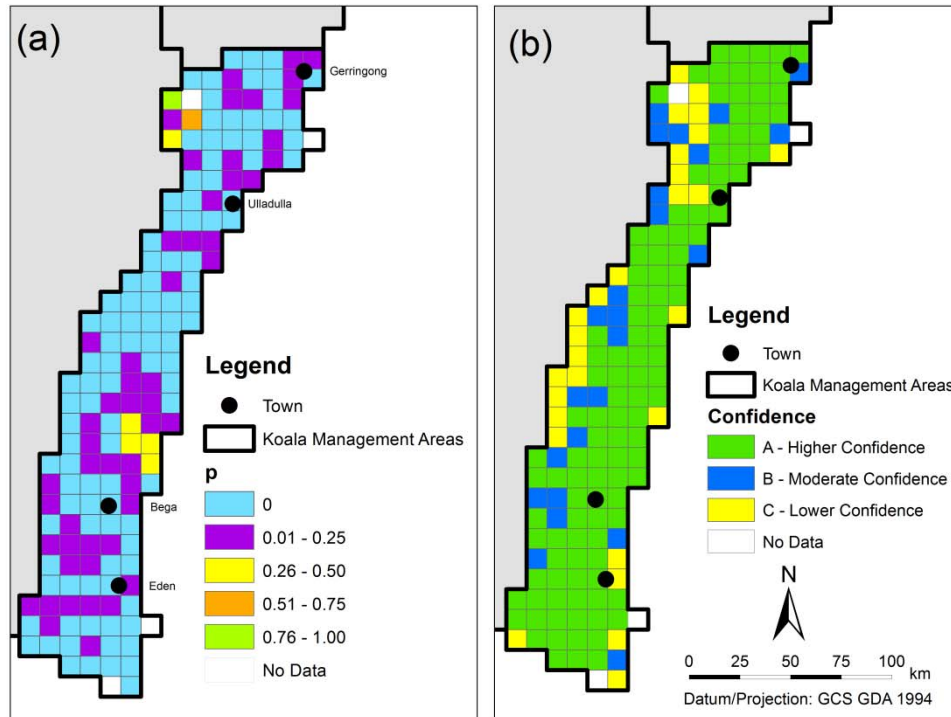


Figure S4: The distribution of (a) the likelihood of koalas (p) and (b) the confidence level in the estimate within Koala Management Area (KMA) 3

Koala Management Area 4 – Northern Tablelands

The NSW Koala Recovery Plan (Department of Environment and Climate Change 2008) indicates that while there are records scattered throughout the KMA the distribution of koalas remains unclear. This pattern is reflected in the current map where generally there is very low likelihood of koalas throughout the KMA (Figure S5a). There does appear to be higher likelihood of koalas to the north-west of Glenn Innes, but estimates in this area are assigned low confidence (Figure S5b).

Koala Management Area 5 – Central & Southern Tablelands

The likelihood map for koalas (Figure S6a) suggests koalas do not exist or are in very low densities across much of the KMA, although the confidence values for the results are generally low (Figure S6b). The likelihood estimates do pick up the known population of koalas to the north-east of Cooma on the Monaro Tablelands (Figure S6a) (Allen 1999) and a population at Bathurst (Department of Environment and Climate Change 2008). Only 23% of the grid cells are assigned to the high confidence category (Figure S6b and Table 3 (main paper)). Six percent of the grid cells have no data (Table 3 in main paper).

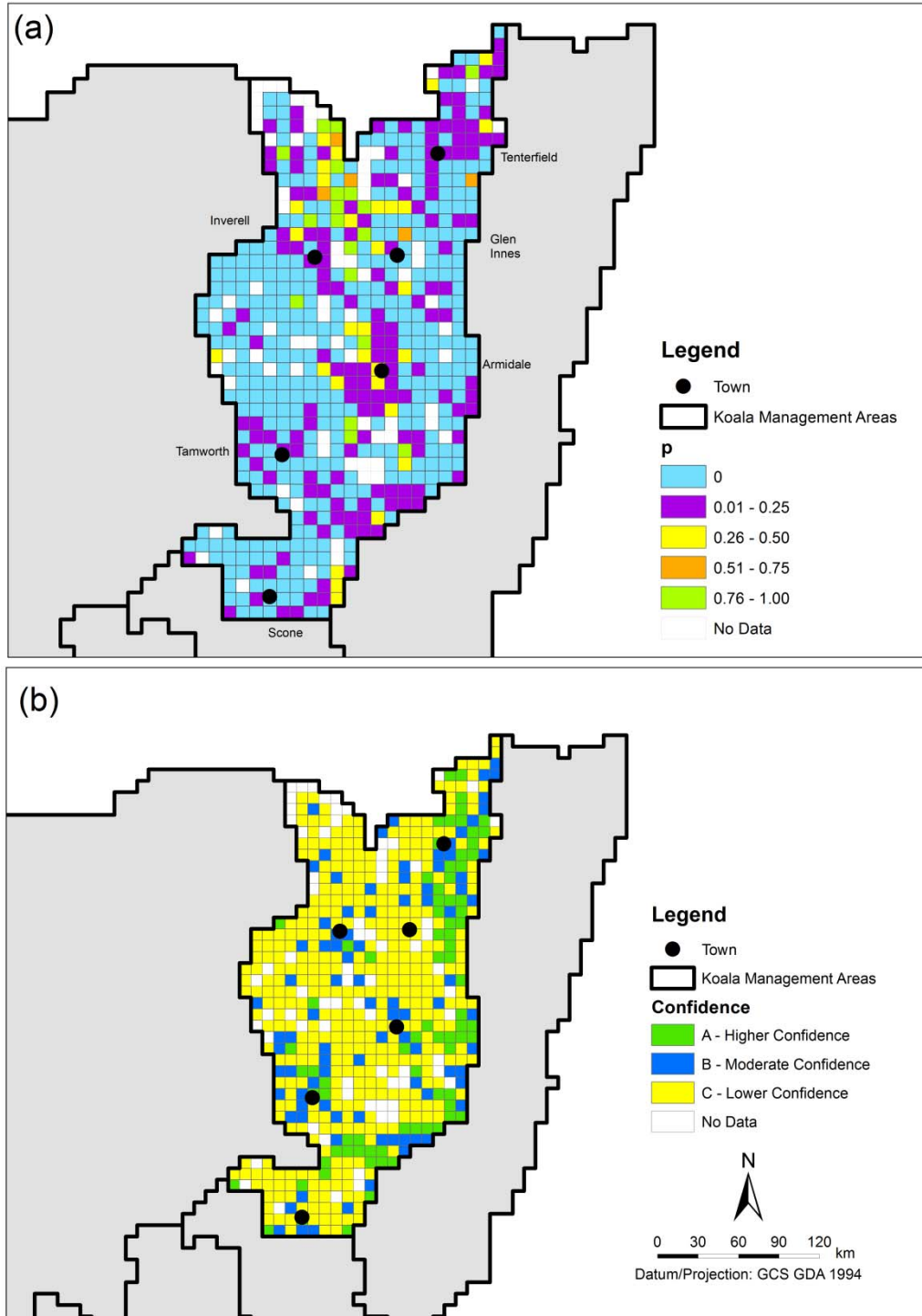


Figure S5: The distribution of (a) the likelihood of koalas (p) and (b) the confidence level in the estimate within Koala Management Area (KMA) 4

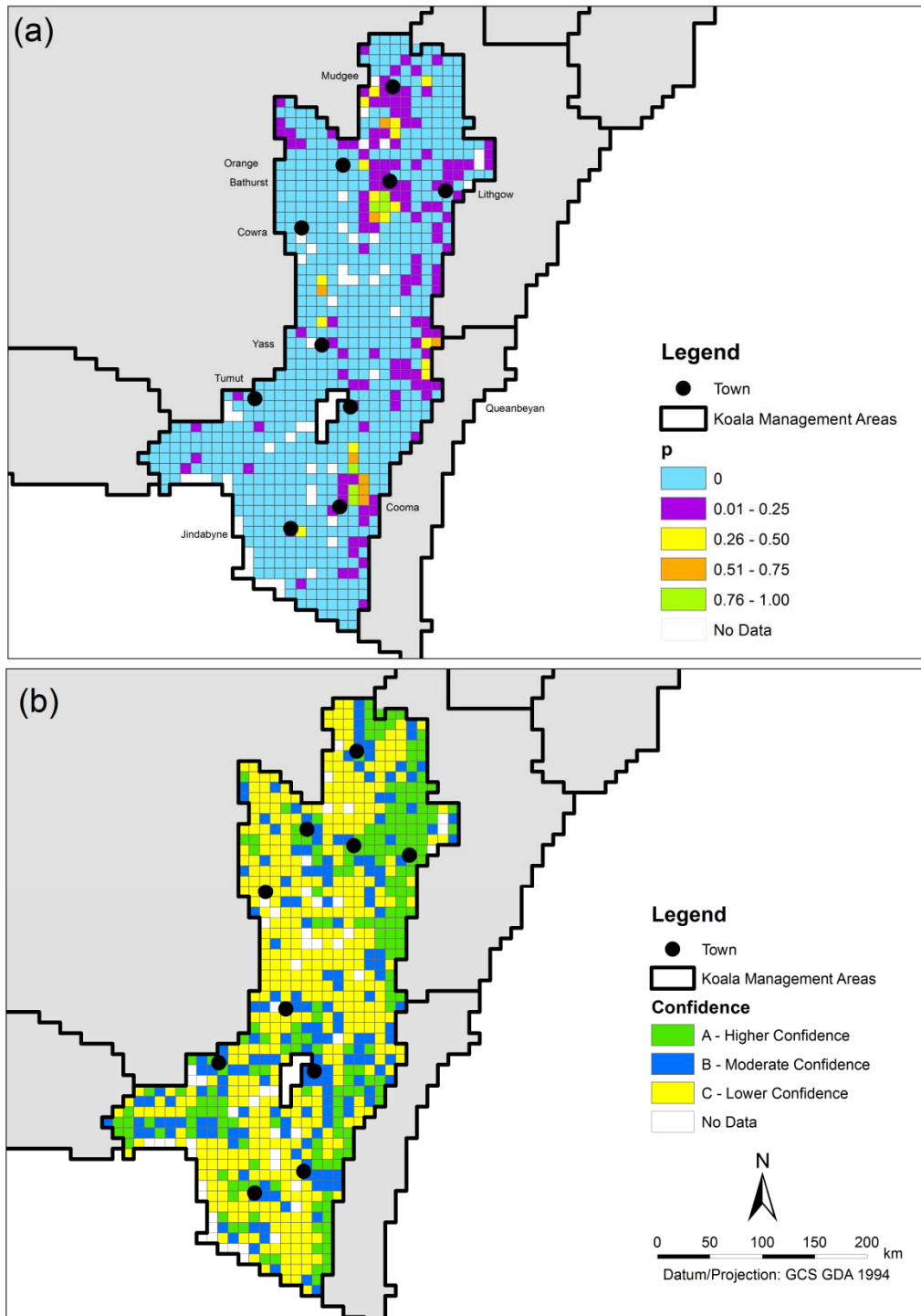


Figure S6: The distribution of (a) the likelihood of koalas (p) and (b) the confidence level in the estimate within Koala Management Area (KMA) 5

Koala Management Area 6 – Western Slopes and Plains

While fifty-six percent of grid cells within KMA6 have no data (Figure S7), these are distributed towards the western half of the KMA. The likelihood map (Figure S7a) highlights large and known populations at Gunnedah (Lunney *et al.* 2012; Lunney *et al.* 2009) and the Pilliga forests south-west of Narrabri (Barrott 1999; Kavanagh and Barrott 2001). It also picks up smaller known populations at Moree (Predavec and McMillan 2008) and along the Murrumbidgee River at Narrandera (Department of Environment and Climate Change 2008). These highlighted populations tend to have moderate or high confidence in the estimates, whereas the rest of the KMA has low confidence (Figure S7b).

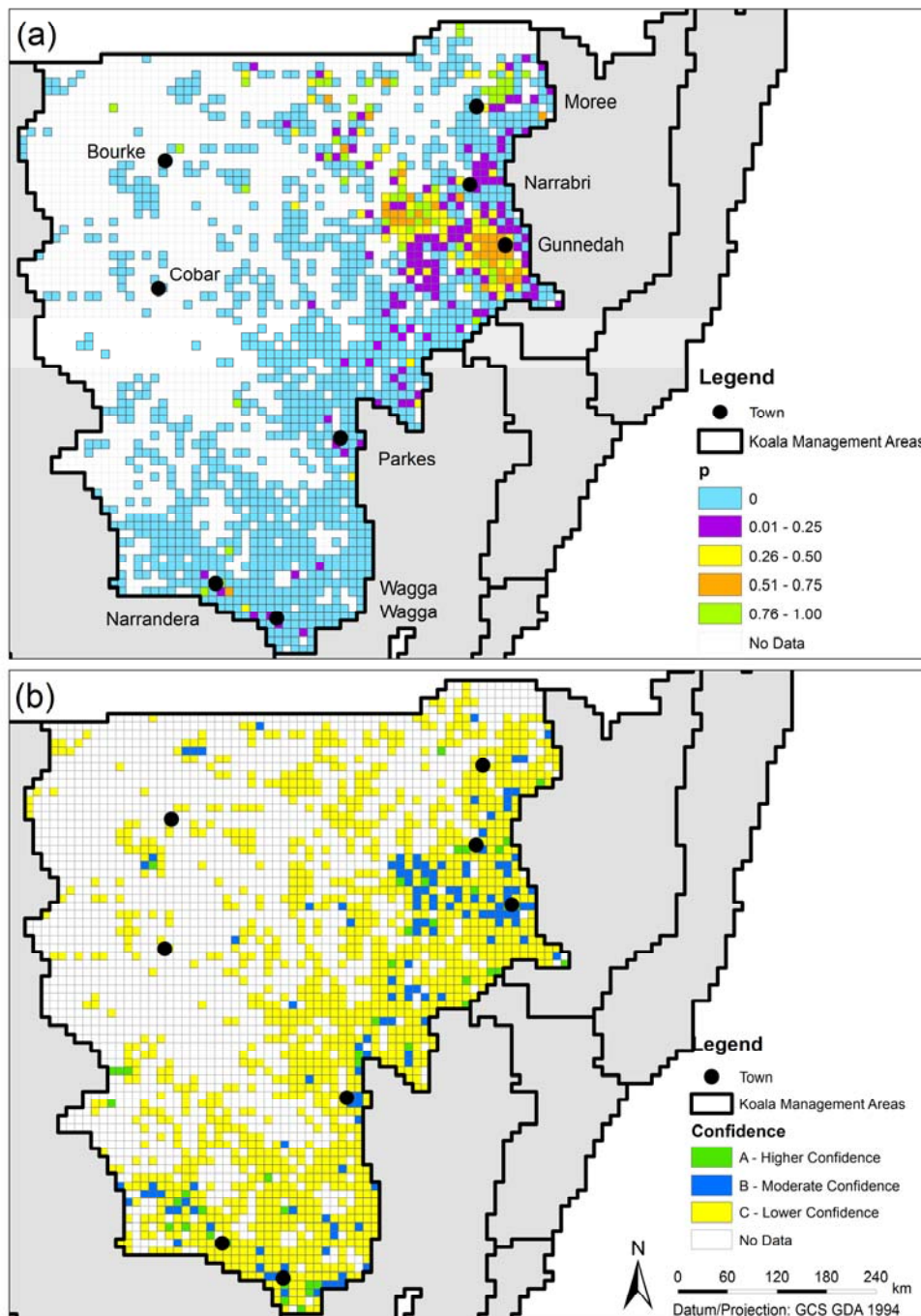


Figure S7: The distribution of (a) the likelihood of koalas (p) and (b) the confidence level in the estimate within Koala Management Area (KMA) 6

Koala Management Area 7 – Far West and South West

KMA7 is characterised by the high number of grid cells with no data (78%) (Figure S8 and Table 3 (main paper)). There are some cells along the Murray River that show low likelihood of koalas (Figure S8a), and this likely corresponds with the distribution of River Red Gum (*E. camaldulensis*) and Coolabah (*E. coolabah*), both primary feed tree species in the KMA (Department of Environment and Climate Change 2008). While there are individual koala records in other locations, such as the records north of Wilcannia (Ellis *et al.* 1997), these grid cells have very low confidence given the very low number of records of any species.

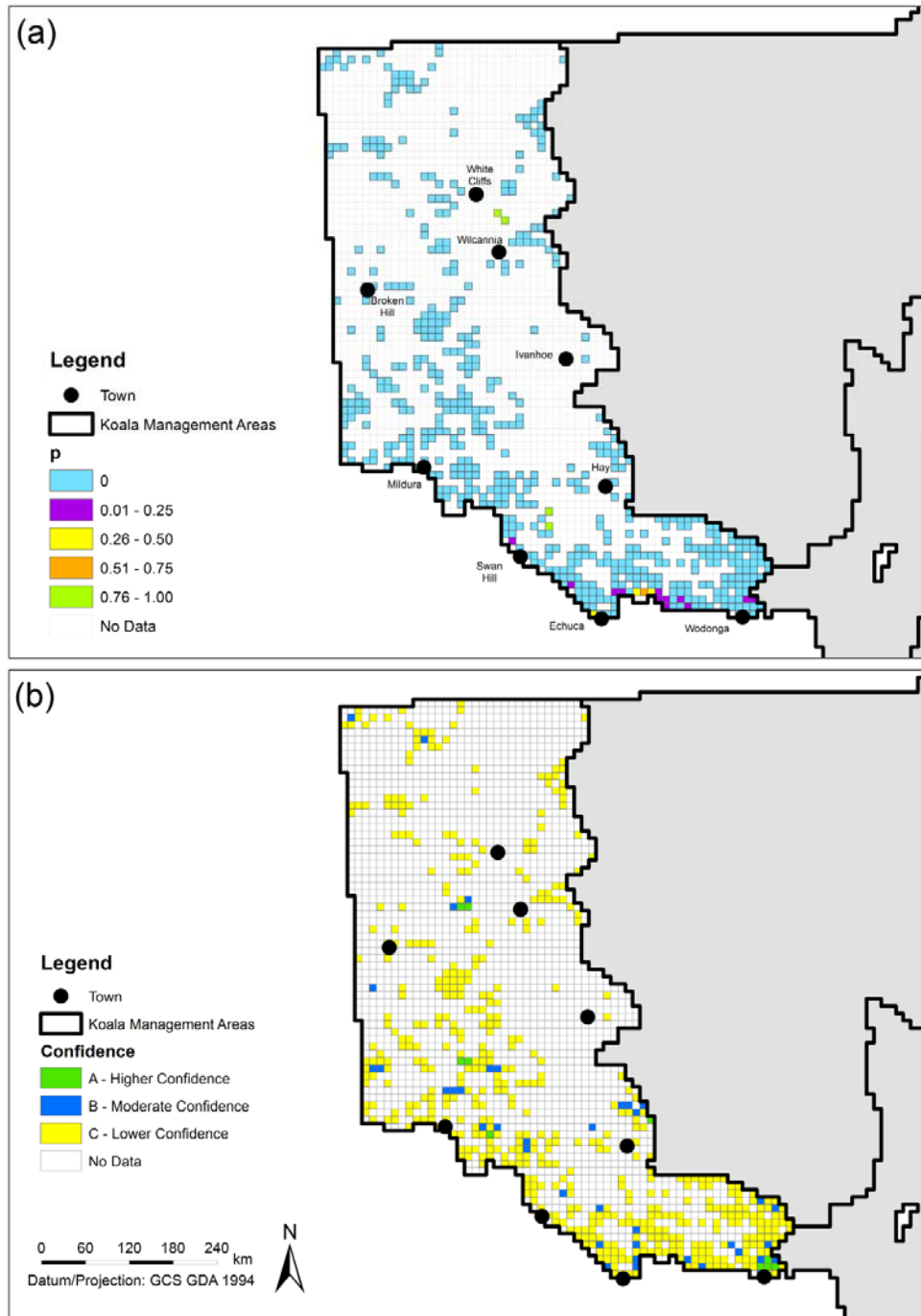


Figure S8: The distribution of (a) the likelihood of koalas (p) and (b) the confidence level in the estimate within Koala Management Area (KMA) 7

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